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ANALYTICAL APPROXIMATIONS

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Analytical Approximation

Chi-Square Integral: To better than .0007 over

$0 \leq x \leq \infty$ for $m = 6$,

$$F_m(m-2+x) = \frac{1}{2\Gamma\left(\frac{m}{2}\right)} \int_0^{m-2+x} \left(\frac{t}{2}\right)^{\frac{m}{2}-1} e^{-\frac{t}{2}} dt$$

$$\doteq 1 - \frac{.6767}{\left[1+.05094x+.005309x^2+.000145x^3\right]^4} .$$

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Analytical Approximation

Chi-Square Integral: To better than .0006 over

$0 \leq x \leq 8$ for $m = 10$,

$$F_m(x) = \frac{1}{2\Gamma\left(\frac{m}{2}\right)} \int_0^x \left(\frac{t}{2}\right)^{\frac{m}{2}-1} e^{-\frac{t}{2}} dt$$

$$\doteq .00019638x^5 - .000056669x^6 + .0000060211x^7$$

$$- .00000022862x^8.$$

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Analytical Approximation

Chi-Square Integral: To better than .0012 over

$0 \leq x \leq \infty$ for $m = 3$,

$$F_m(m-2+x) = \frac{1}{2\Gamma\left(\frac{m}{2}\right)} \int_0^{m-2+x} \left(\frac{t}{2}\right)^{\frac{m}{2}-1} e^{-\frac{t}{2}} dt$$

$$\doteq 1 - \frac{.0012}{\left[1+.0778x+.009774x^2+.00005993x^3\right]^4} .$$

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Analytical Approximation

Chi-Square Integral: To better than .0009 over

$0 \leq x \leq \infty$ for $m = 4$,

$$F_m(m-2+x) = \frac{1}{2\Gamma\left(\frac{m}{2}\right)} \int_0^{m-2+x} \left(\frac{t}{2}\right)^{\frac{m}{2}-1} e^{-\frac{t}{2}} dt$$

$$\doteq 1 - \frac{.7358}{\left[1+.06399x+.007689x^2+.0001227x^3\right]^4}.$$

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Analytical Approximation

Chi-Square Integral: To better than .0001 over $0 \leq x < \infty$ for $m = 5$,

$$F_m(m-2+x) = \frac{1}{2\Gamma\left(\frac{m}{2}\right)} \int_0^{m-2+x} \left(\frac{t}{2}\right)^{\frac{m}{2}-1} e^{-\frac{t}{2}} dt$$

$$\doteq 1 - \frac{.7000}{\left[1+.05619x+.006286x^2+.0001423x^3\right]^4}.$$

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